



**Indoor
Air Quality
Solutions**

"Healthier Air Starts Here"

Mold Assessment

of the school located at
248 North Samsula Drive
New Smyrna Beach, Florida 32168

A Division of
Microshield Environmental Services, LLC.

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ATTN: Billy Temple

January 8, 2025

REF: Mold Assessment

On January 2nd, 2025, Indoor Air Quality Solutions, IAQS conducted a Mold Assessment of the school facility located at 248 North Samsula Drive New Smyrna Beach, Florida 32168 (property) and prepared this report for Billy Temple, VP of Operations, Southcrest Management, LLC (client) summarizing the findings.

Client's Areas of Concern

Mr. Temple would like to establish the need for extensive mold remediation as recommended by Environmental Management Services, EMS.

Mold Assessment

The assessment was conducted in accordance with the industry standard of practice the ASTM D-7338 Assessment of Fungal Growth in Buildings. The purpose of a mold assessment is to determine the sources, locations, and extent of mold growth in a building and to determine the condition(s) that caused the mold growth.

Property Information

The property consists of 3 buildings with the original building (Building 1) being constructed in 1912. Building 1 is brick construction over a crawl space with a flat roof. Buildings 2 and 3 are more recently constructed and are cmu block construction on slab on grade foundations with a combination of metal and flat roofs.

Environmental Management Services, EMS Report Review

EMS conducted their assessment on November 26 and 27, 2024. The assessment was conducted in response to concerns regarding moisture intrusion and possible microbial amplification within buildings 1, 2, and 3 which house the main offices, classrooms, and cafeteria respectively.

EMS employed an environmental sampling strategy that consisted of visual observations, photographic documentation, the measurement of indoor air quality comfort parameters, and the evaluation of potential microbial populations in the air and on latent surfaces.

EMS collected 15 indoor air samples for airborne mold spores and 2 outdoor air samples for mold spores. Seven of the air samples were collected in building 1. EMS reported microbial amplification detected in the air samples for the conference room and the room to the West of the kitchen. Samples 2 and 16. EMS stated that sample 16 had elevated *Aspergillus/Penicillium* at 950 spores per cubic meter. EMS reported this was typically an indicator of a moisture impact issue with associated microbial amplification. EMS reported the conference room as having an amplification but did not provide an opinion as to why.

IAQS found no elevations of airborne mold in any of the samples collected. Most importantly EMS stated possible microbial amplification without identifying any actual mold growth other than that on the HVAC supply diffusers.

EMS collected 5 air samples from building 2 and another 3 from building 3. EMS reported no elevations in any of those samples.

EMS also collected 9 surface samples for mold spores. Six of those samples were collected from building 1. Of those samples, 4 were collected from HVAC supply diffusers, 2 from horizontal

surfaces and one from a wall. Two additional samples were collected from the HVAC supply diffusers from building 2.

The Eurofins laboratory reports used to contain the following statement. "Eurofins AEML makes no claims pertaining to the necessity of remediation. The results contained in this report should be used in conjunction with a physical inspection of the property to determine what, if any, actions are necessary." Unfortunately, to stay competitive all microbiology laboratories now provide some form of sample interpretation for the mold assessors who seem to have become solely reliant on the laboratory's opinion of their collected samples.

Surface samples should be reported in the area of visible mold not in the number of spores on the swab used to collect the sample. The results should never be left to the laboratory because the laboratory has not visually observed the area sampled. As stated by the EPA in the Mold Remediation in Schools and Commercial Buildings, mold should be reported in the size of the moldy area. Small areas can be cleaned in house before they become medium or large areas.

In the case of the HVAC supply diffusers, the area is limited to the diffuser which should be cleaned as part of regular housekeeping. The mold identified on the HVAC supply diffusers was *Cladosporium*. There was no *Cladosporium* identified in any of the EMS collected air samples except the single sample collected from building 1 conference room.

IAQS Executive Summary

While we found areas of building envelope failure, we found no areas in need of professional mold remediation. The areas of building envelope failure were either at the roof where the water quickly passes through the acoustic ceiling tiles leaving no mold growth as shown in the EMS inspection pictures or at the exterior brick walls finished with interior plaster which does not support mold growth.

There was no indication of mold contamination on any of the belongings or building materials that would merit building 1 conference room, building 1 media room inclusive of the back office, the southeast offices, and to the offices to the west of the kitchen in building 3 mold remediation or contents pack out. EMS reported no visible mold in any of these areas. There was no elevation of mold in any of the samples collected by EMS. We do not see the need to pack-out the areas and clean all contents. We did not see any indication of the need during our assessment and the samples collected by EMS support that opinion.

We feel the focus should be on the humidity of the buildings and the building envelope failure of building 1. The primary issues with building 1 are with the condition of the original windows and paint along with the strong possibility of the presence of asbestos and lead. Nothing can be done to the interior of the buildings without a complete asbestos and lead paint survey. Once the survey is complete, the repairs to the interior plaster walls and original wood windowpanes can be completed. The exterior building envelope should be addressed as soon as possible to include the areas identified by both IAQS and EMS.

School management should use the attached checklist from the EPA Mold Remediation in Schools and Commercial Buildings to inspect and identify areas of xerophilic mold growth (humidity bloom) when they are small and isolated and clean the areas of identified xerophilic mold growth (humidity bloom) by spritzing the area with soap and water and wiping with a microfiber cloth. Use a classroom hygrometer to monitor the indoor humidity. The humidity should be at or below 55%. If the classroom humidity rises above 60%, the elevated humidity should be reported that day.

Follow the EPA Publication - Mold Remediation in Schools and Commercial Buildings Checklist for Mold Remediation and Table 2: Guidelines for Remediating Building Materials to determine when its necessary to hire an outside contractor for large mold remediation projects.

EMS Air Sample Result Summary

Sample ID No.	Building	Location	Sample Type	Total	Mold Genus (spores/m ³)	Elevation
SA-A-2	Bldg-1	Conference Room (1 st room on right inside main entry)	Air	760	Ascospores 53 Basidiospores 160 Cladosporium 53 Other Brown 27 Aspergillus/Penicillium 470	No Elevation
SA-A-3	Bldg-1	Reception Desk	Air	370	Basidiospores 320 Aspergillus/Penicillium 53	No Elevation
SA-A-4	Bldg-1	Middle Office in North-South Hall	Air	810	Basidiospores 800 Curvularia 13	No Elevation
SA-A-5	Bldg-1	Rm Behind Stage in Media Rm	Air	480	Basidiospores 430 Aspergillus/Penicillium 53	No Elevation
SA-A-6	Bldg-1	Break Room	Air	560	Basidiospores 430 Curvularia 13 Aspergillus/Penicillium 110 Smuts, Periconia, Myxomycetes 13	No Elevation
SA-A-7	Bldg-1	Media Room	Air	590	Basidiospores 530 Aspergillus/Penicillium 53	No Elevation
SA-A-8	Bldg-1	Art Room	Air	320	Basidiospores 320	No Elevation
SA-A-9	Bldg-3	Cafeteria	Air	320	Basidiospores 210 Aspergillus/Penicillium 110	No Elevation
SA-A-10	Bldg-3	PE Office (Northeast corner of building)	Air	150	Basidiospores 53 Epicoccum 13 Other Brown 13 Aspergillus/Penicillium 53 Smuts, Periconia, Myxomycetes 13	No Elevation
SA-A-11	Bldg-3	Cafeteria Manager Office	Air	210	Basidiospores 160 Aspergillus/Penicillium 53	No Elevation
SA-A-12	Bldg-2	Southwest Classroom	Air	160	Basidiospores 110 Aspergillus/Penicillium 53	No Elevation
SA-A-13	Bldg-2	Northeast Classroom	Air	110	Basidiospores 110	No Elevation
SA-A-14	Bldg-2	Northwest Classroom	Air	53	Basidiospores 53	No Elevation
SA-A-15	Bldg-2	Southeast Classroom	Air	210	Basidiospores 210	No Elevation
SA-A-16	Bldg-2	Southwest Room (West of kitchen)	Air	1,500	Ascospores 110 Basidiospores 480 Aspergillus/Penicillium 950	No Elevation

The reporting of No Elevation is based on the IAQS interpretation of the results and our onsite assessment. EMS reported microbial amplification detected in the air samples for the conference room and the room to the West of the kitchen. Samples 2 and 16. With sample 16 as having elevated Aspergillus/Penicillium at 950 spores per cubic meter. EMS reported this was typically an indicator of a moisture impact issue with associated microbial amplification.

EMS Swab Sample Result Summary

Sample ID No.,	Building	Location	Sample Type	Mold Genus
SA-SW-1	Bldg-1	Diffusers Office Side	Swab	Cladosporium Aspergillus/Penicillium
SA-SW-2	Bldg-1	Horizontal Surfaces Office Side	Swab	Brown Hyphae
SA-SW-3	Bldg-1	Southeast Corner of Media Room at Wall Damage	Swab	Aspergillus/Penicillium
SA-SW-4	Bldg-1	Diffusers in Conference Room (1 st room on rig1ht inside main entry)	Swab	Cladosporium
SA-SW-5	Bldg-1	Diffusers and Ceiling in Room Behind Stage in Media Room	Swab	Cladosporium
SA-SW-6	Bldg-1	Diffusers in Art Room	Swab	Cladosporium
SA-SW-7	Bldg-1	Horizontal Surfaces in Art Room	Swab	Curvularia
SA-SW-8	Bldg-2	Diffusers in South Classroom Pod	Swab	Cladosporium Curvularia
SA-SW-9	Bldg-2	Diffusers in North Classroom Pod	Swab	Cladosporium

EMS Specific Recommendations

EMS makes the following recommendations, which are offered as general actions to be taken to correct the deficiencies observed.

To be performed by a Florida licensed roofing contractor:

- It is recommended that a certified thermographer be used to perform a scan of all roof coverings and membranes to determine if there is water entrapment and/ or leaks around roof deck penetrations. The evaluation should also include laps, caps, and seals. Make repairs as required.
- It is recommended that any roof repairs be validated using ASTM water testing standards.
- It is recommended that all roof flashing be evaluated for proper installation and sealing. Make repairs as required.

It is recommended that Florida licensed general contractor (GC) evaluate the exterior building envelope for needed repairs and waterproofing.

- It is recommended that exterior cracks (inclusive of structural cracks), damage, areas of rust bleeding through the stucco and areas of prior repairs and infills be evaluated for repair and water proofing.
- It is recommended that all window to frame and window frame to building connections be evaluated for proper sealing and wood rot. Repairs and/or resealing are to be completed as required.
- It is recommended that all above ceiling rain leaders be inspected for cracks and proper installation.
- It is recommended that the window evaluation as well as any resealing efforts be validated using ASTM water testing standards while the interior wall cavity is exposed during remediation activities.
- It is recommended that all exterior door seals be evaluated for wear, damage and seal integrity with repair or replacement performed as required.

To be performed by a Florida-licensed, NADCA-certified commercial mechanical contractor:

- Evaluate the current use and capability of the HVAC system(s) servicing buildings 1 and 3 against the design specifications. Evaluation should include an assessment of the system's temperature control and dehumidification capability in maintaining humidity levels below 60% and optimally between 30 and 50%.
- Evaluate legacy ductwork which remains operational and correctly abandon as needed.
- Evaluate the above ceiling line set insulation leak/sweat in middle office of building 1. Evaluate above ceiling line set insulation in all three buildings for proper insulation.
- Evaluate all duct work for proper insulation, proper sealing of insulation and proper sealing of duct and insulation connections. Insulate and/or make repairs as required. Any water impacted duct insulation resulting in reduced R value is to be replaced.
- Following NADCA protocol, clean all HVAC system(s). This should include drip pans, spiral fans, AHU interiors and exteriors, ducts, coils, gaskets, diffusers, and return grills and vanes. Any return or supply grills and ducts that cannot be cleaned are to be replaced.

We do not agree that any of the HVAC ducts should be sanitized or that any internally lined ducts and/or duct board are to be additionally encapsulated. Ducts that cannot be cleaned should be replaced.

From the NADCA position paper on using chemical products in HVAC systems.

Is sanitizing ductwork legal? NO. The EPA has not registered any products for sanitizing or disinfecting ductwork. Further, no fungicides are registered for use in ductwork. As noted earlier in this document, IT IS A VIOLATION OF FEDERAL LAW TO USE A PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING. For antimicrobials, this law is the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). Therefore, any claims of sanitizing or disinfecting ductwork would require the use of a product in a manner inconsistent with its labeling, which is a violation of FIFRA. Violations of FIFRA can result in fines and criminal penalties from the EPA. [Sic]

IAQS Specific Recommendations

These areas include.

- Conduct an asbestos and lead base paint survey as soon as possible on all three buildings.
- Use a classroom hygrometer to monitor the indoor humidity. The humidity should be at or below 55%. If the classroom humidity rises above 60%, the elevated humidity should be reported that day.
- Clean the HVAC supply diffusers with soap and water.
- Have the HVAC systems cleaned by a NADCA certified mechanical contractor.
- Replace the rodent impacted HVAC duct board supply and return plenums.
- The amount of outdoor air being supplied to the buildings should be established by the mechanical contractor.
 - The set point could be set to the maximum capacity of each building or 100% closed. Establishing the outdoor air setting can easily include or exclude the ventilation air as a contributor.
- Supplemental dehumidification is recommended for all three buildings.
- Replace all water-stained acoustic ceiling tiles.
- Clean the areas of identified xerophilic mold growth (humidity bloom) by spritzing the area with soap and water and wiping with a microfiber cloth.
- Clean areas of identified mold growth on the masonry walls behind the base boards with soap and water.
- Use a standalone HEPA air filtration device to help remove fine particulates when cleaning.
- Follow the EPA Publication - Mold Remediation in Schools and Commercial Buildings Checklist for Mold Remediation and Table 2: Guidelines for Remediating Building Materials to determine when its necessary to hire an outside contractor for large mold remediation projects.
- Repair the exterior areas of building envelope failure and then repair the interior of the buildings in accordance with the findings of the asbestos and lead surveys.

Report Limitations & Exclusions

All the professional opinions presented in this report are based solely on the scope of work conducted and sources referred to in our report. The data presented by the certified indoor environmental consultant in this report was collected and analyzed using generally accepted industry methods and practices at the time the report was generated.

This report represents the conditions, locations and material that were observed at the time the fieldwork was conducted. The scope of work for this project did not include an assessment of other environmental conditions which might exist on the property. This report was prepared for the sole use of our client. The use of this report by anyone other than our client or the certified inspector is strictly prohibited without the expressed written consent of the certified inspector. Portions of this report may not be used independently of the entire report.

Thank you for allowing us to provide you with this service.



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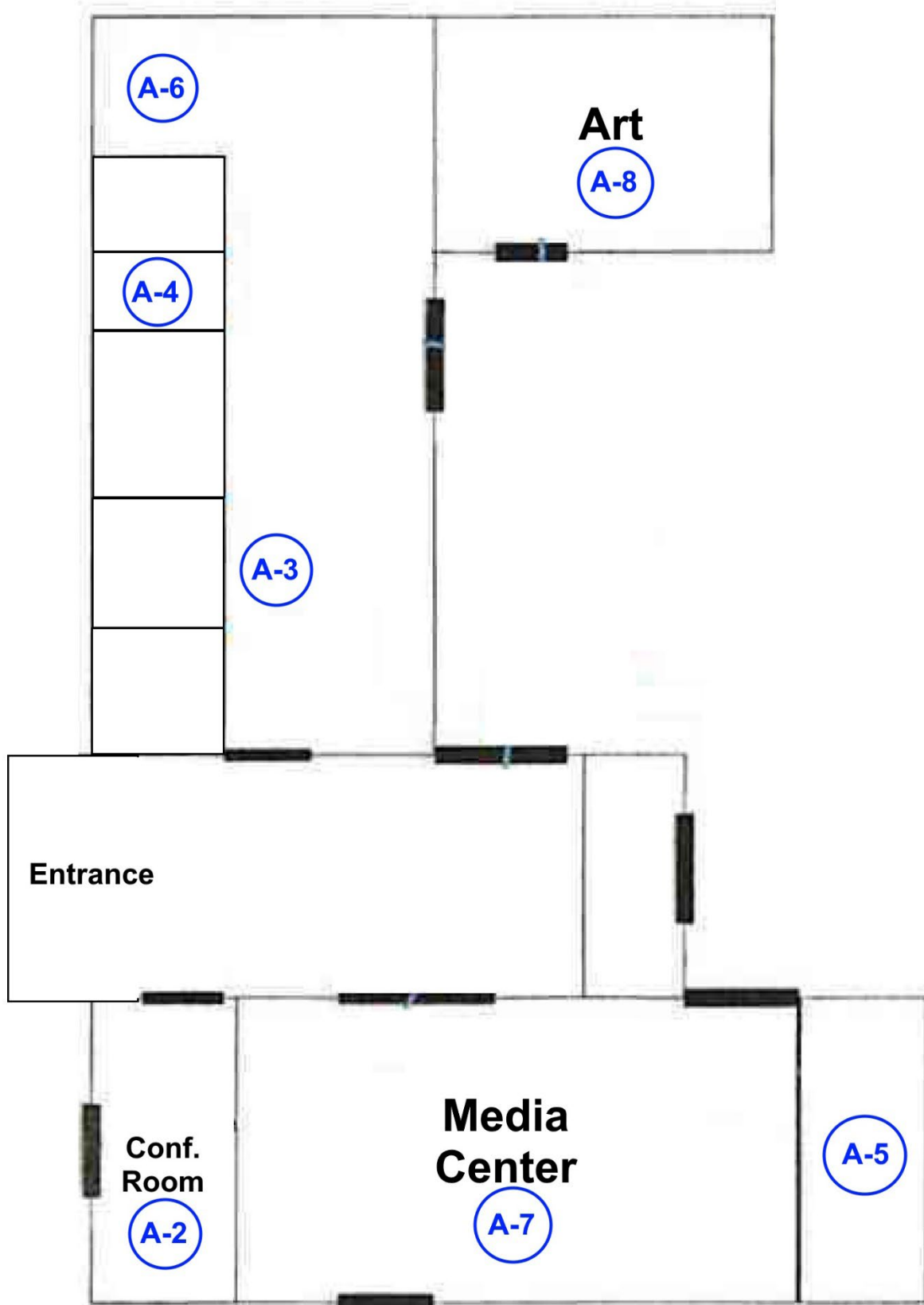
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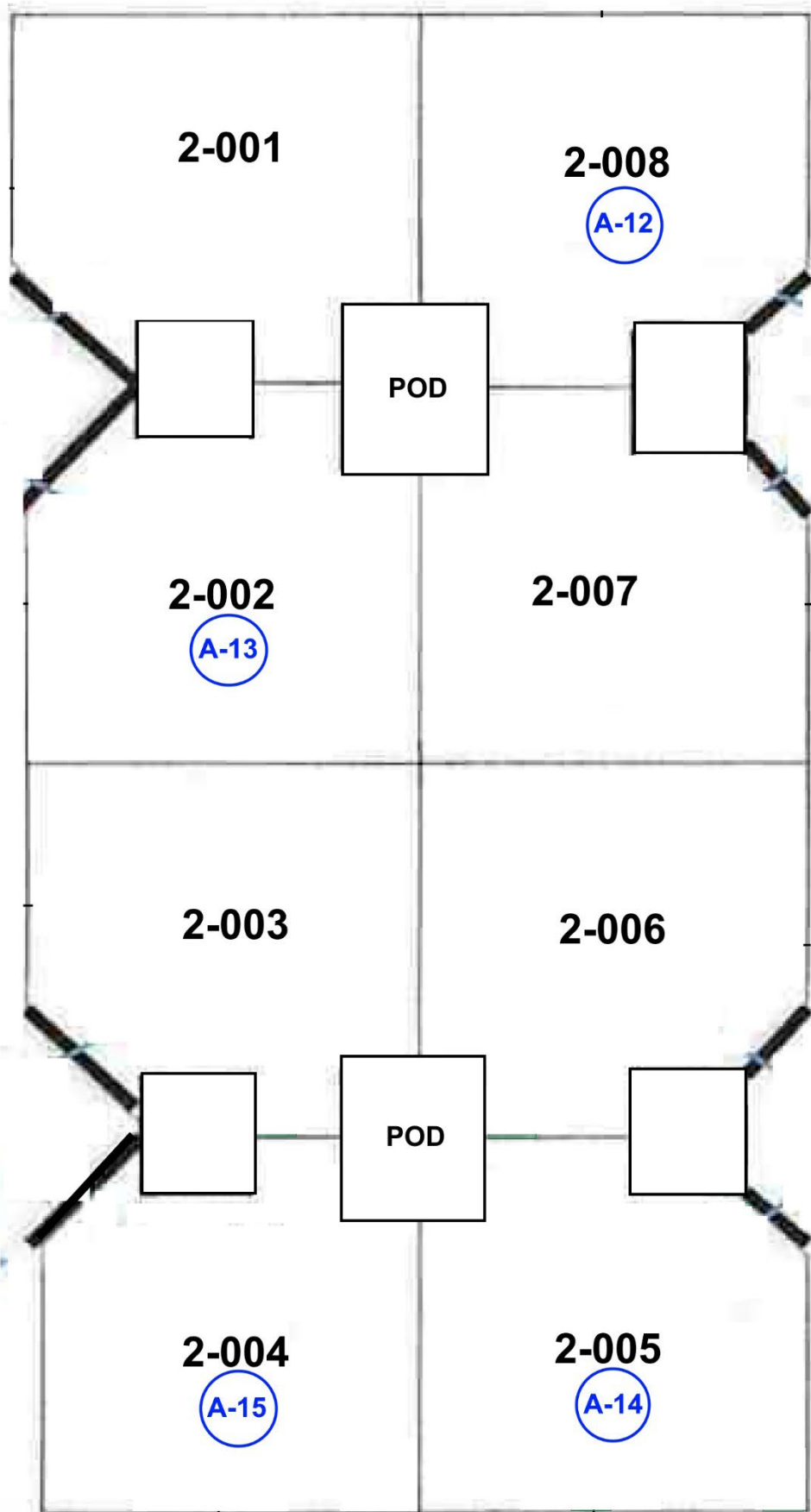
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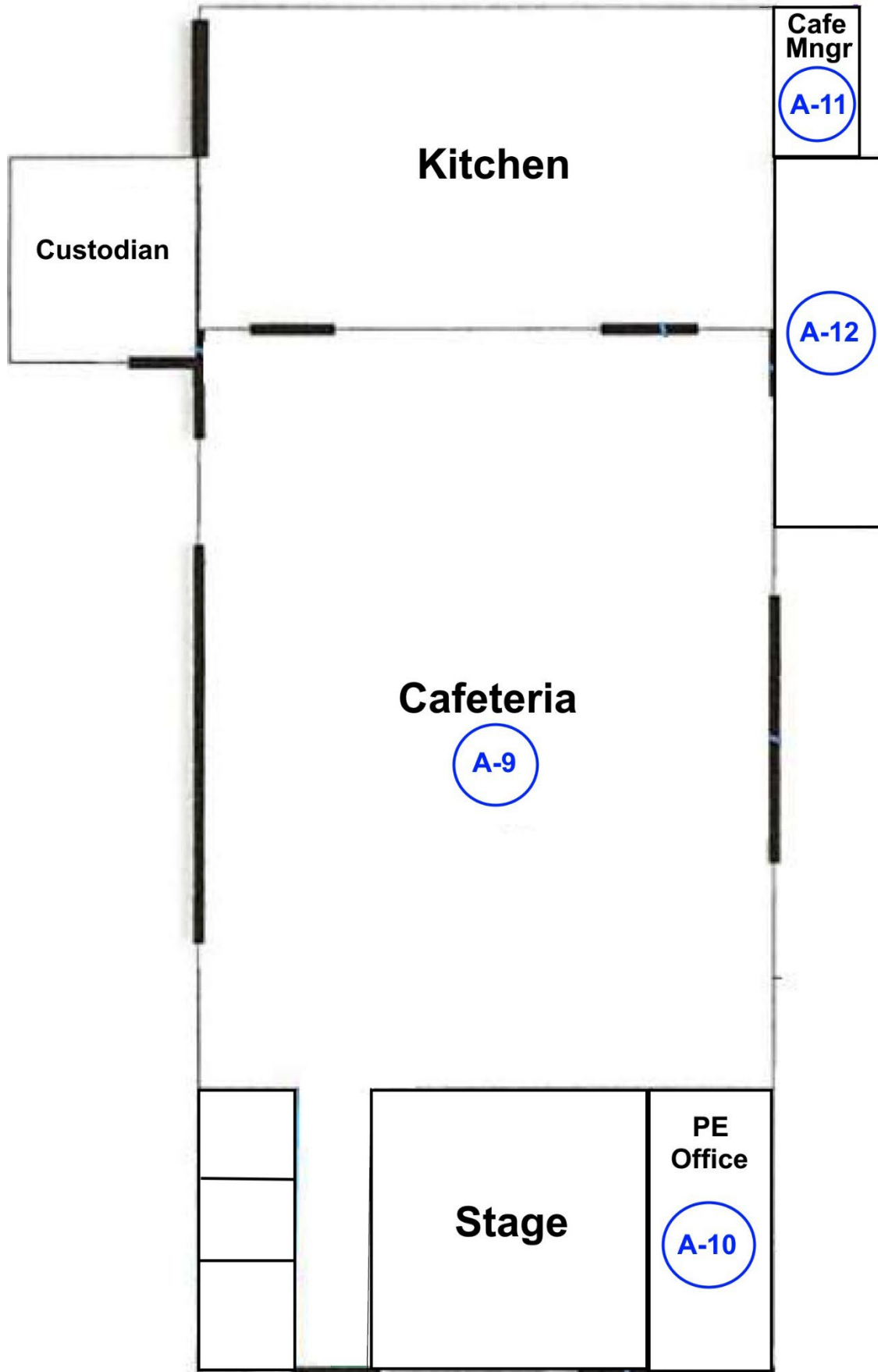
EMS Sample Areas

Building 1



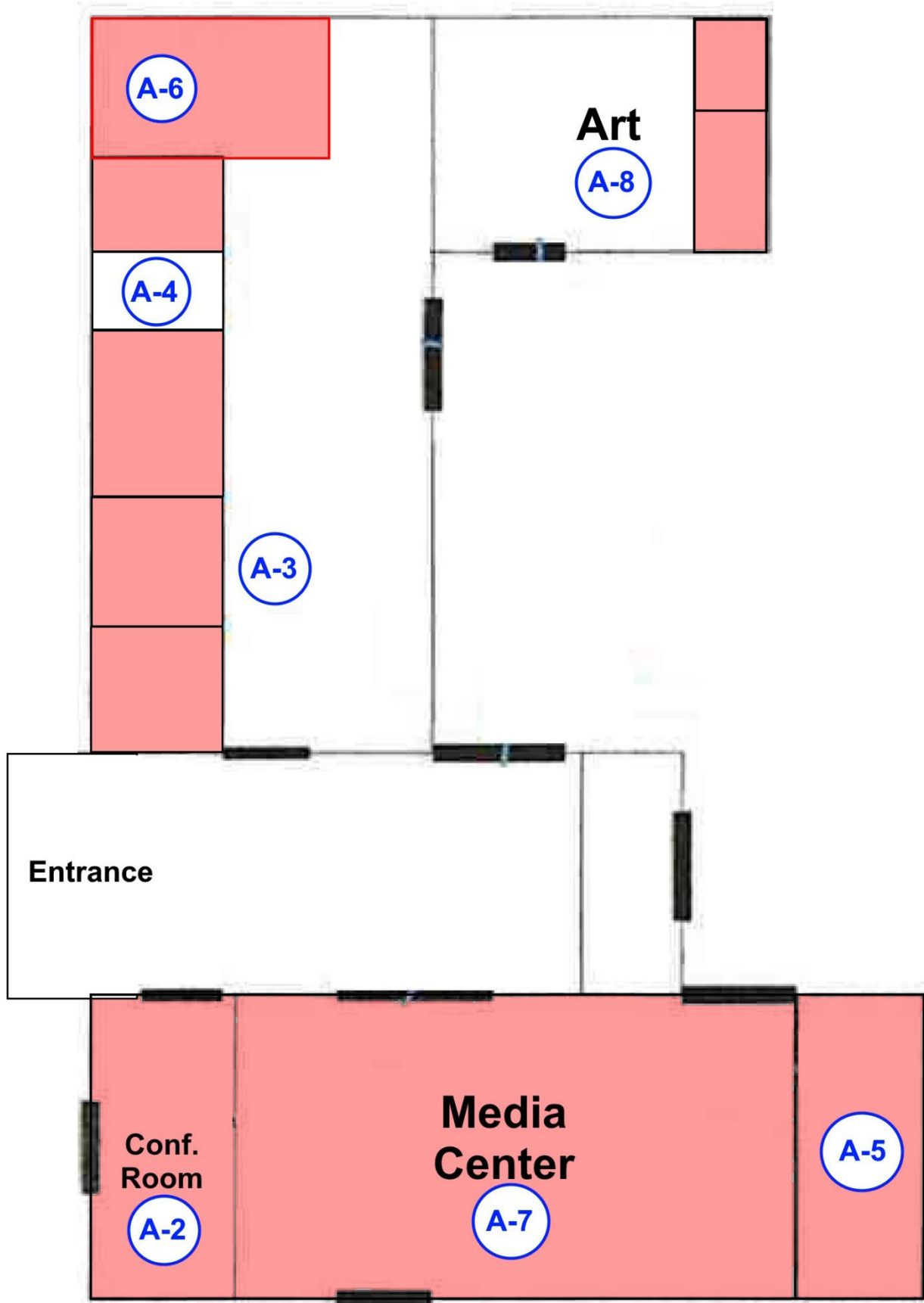
Building 2

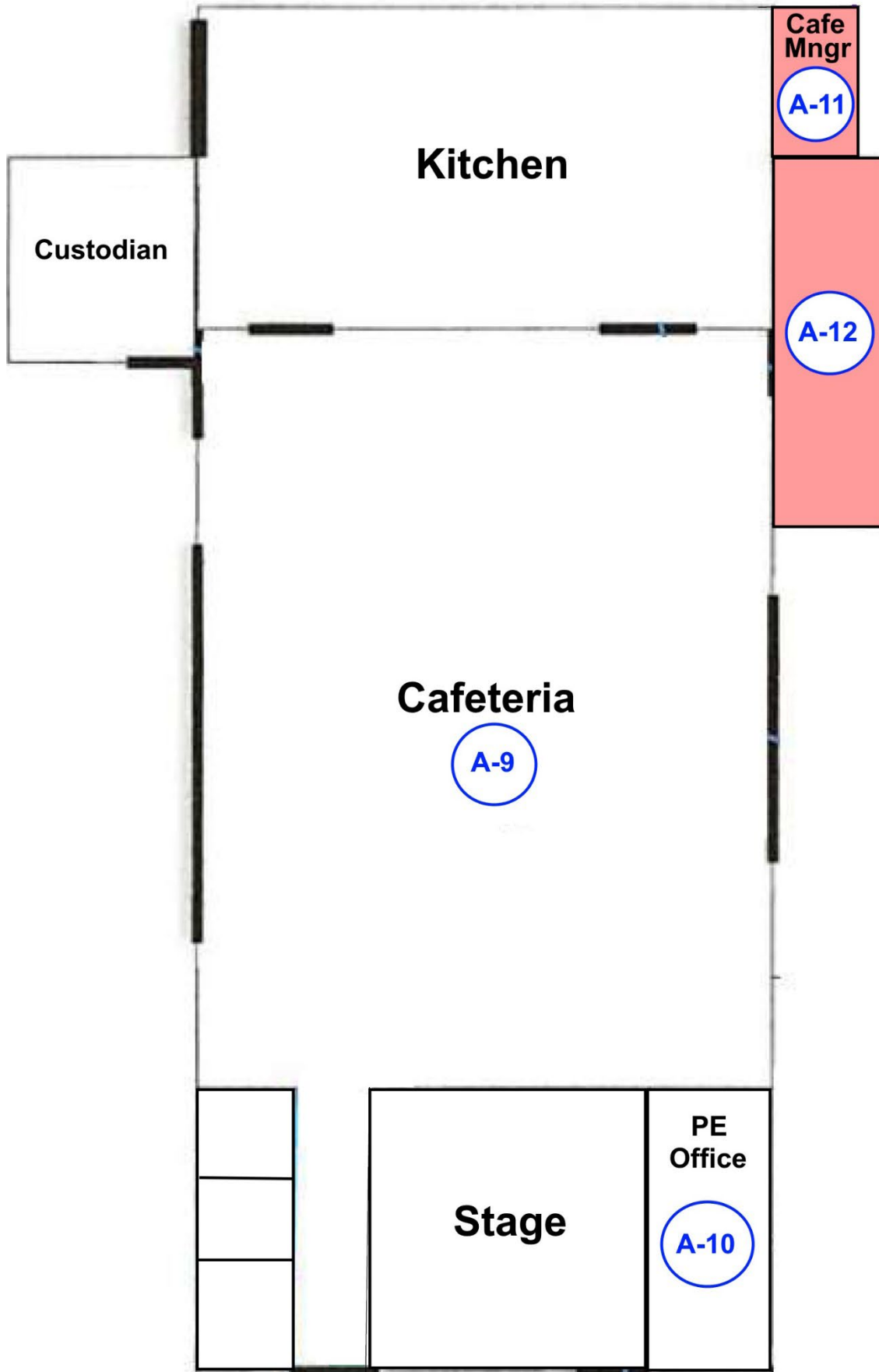




EMS Recommended Remediation Areas

Building 1





Mold Remediation in Schools and Commercial Buildings

EPA Checklist for Mold Remediation

Investigate and evaluate moisture and mold problems

- Assess size of moldy area (square feet)
- Consider the possibility of hidden mold
- Clean up small mold problems and fix moisture problems before they become large problems
- Select remediation manager for medium or large size mold problem
- Investigate areas associated with occupant complaints
- Identify source(s) or cause of water or moisture problem(s)
- Note type of water-damaged materials (wallboard, carpet, etc.)
- Check inside air ducts and air handling unit
- Throughout process, consult qualified professional if necessary or desired

Communicate with building occupants at all stages of process, as appropriate

- Designate contact person for questions and comments about medium or large scale remediation as needed

Plan remediation

- Adapt or modify remediation guidelines to fit your situation; use professional judgment
- Plan to dry wet, non-moldy materials within 48 hours to prevent mold growth (see Table 1 and text)
- Select cleanup methods for moldy items (see Table 2 and text)
- Select Personal Protection Equipment – protect remediators (see Table 2 and text)
- Select containment equipment – protect building occupants (see Table 2 and text)
- Select remediation personnel who have the experience and training needed to implement the remediation plan and use Personal Protection Equipment and containment as appropriate

Remediate moisture and mold problems

- Fix moisture problem, implement repair plan and/or maintenance plan
- Dry wet, non-moldy materials within 48 hours to prevent mold growth
- Clean and dry moldy materials (see Table 2 and text)
- Discard moldy porous items that can't be cleaned (see Table 2 and text)

EPA Table 1: Water Damage – Cleanup and Mold Prevention

Guidelines for Response to Clean Water Damage within 24 – 48 Hours to Prevent Mold Growth*	
Water-Damaged Material†	Actions
Books and papers	<ul style="list-style-type: none"> * For non-valuable items, discard books and papers. * Photocopy valuable/important items, discard originals. * Freeze (in frost-free freezer or meat locker) or freeze-dry.
Carpet and backing – dry within 24 – 48 hours‡	<ul style="list-style-type: none"> * Remove water with water extraction vacuum. * Reduce ambient humidity levels with dehumidifier. * Accelerate drying process with fans.
Ceiling tiles	<ul style="list-style-type: none"> * Discard and replace.
Cellulose insulation	<ul style="list-style-type: none"> * Discard and replace.
Concrete or cinder block surfaces	<ul style="list-style-type: none"> * Remove water with water extraction vacuum. * Accelerate drying process with dehumidifiers, fans, and/or heaters.
Fiberglass insulation	<ul style="list-style-type: none"> * Discard and replace.
Hard surface, porous flooring§ (Linoleum, ceramic tile, vinyl)	<ul style="list-style-type: none"> * Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary. * Check to make sure underflooring is dry; dry underflooring if necessary.
Non-porous, hard surfaces (Plastics, metals)	<ul style="list-style-type: none"> * Vacuum or damp wipe with water and mild detergent and allow to dry; scrub if necessary.
Upholstered furniture	<ul style="list-style-type: none"> * Remove water with water extraction vacuum. * Accelerate drying process with dehumidifiers, fans, and/or heaters. * May be difficult to completely dry within 48 hours. If the piece is valuable, you may wish to consult a restoration/water damage professional who specializes in furniture.
Wallboard (Drywall and gypsum board)	<ul style="list-style-type: none"> * May be dried in place if there is no obvious swelling and the seams are intact. If not, remove, discard, and replace. * Ventilate the wall cavity, if possible.
Window drapes	<ul style="list-style-type: none"> * Follow laundering or cleaning instructions recommended by the manufacturer.
Wood surfaces	<ul style="list-style-type: none"> * Remove moisture immediately and use dehumidifiers, gentle heat, and fans for drying. (Use caution when applying heat to hardwood floors.) * Treated or finished wood surfaces may be cleaned with mild detergent and clean water and allowed to dry. * Wet paneling should be pried away from wall for drying.
<p>*If mold growth has occurred or materials have been wet for more than 48 hours, consult Table 2 guidelines. Even if materials are dried within 48 hours, mold growth may have occurred. Items may be tested by professionals if there is doubt. Note that mold growth will not always occur after 48 hours; this is only a guideline.</p> <p>These guidelines are for damage caused by clean water. If you know or suspect that the water source is contaminated with sewage, or chemical or biological pollutants, then Personal Protective Equipment and containment are required by the Occupational Safety and Health Administration (OSHA). An experienced professional should be consulted if you and/or your remediators do not have expertise remediating in contaminated water situations. Do not use fans before determining that the water is clean or sanitary.</p> <p>† If a particular item(s) has high monetary or sentimental value, you may wish to consult a restoration/water damage specialist.</p> <p>‡ The subfloor under the carpet or other flooring material must also be cleaned and dried. See the appropriate section of this table for recommended actions depending on the composition of the subfloor.</p>	

EPA Table 2: Guidelines for Remediating Building Materials

Material or Furnishing Affected	Cleanup Methods [†]	Personal Protective Equipment	Containment
SMALL – Total Surface Area Affected Less Than 10 square feet (ft²)			
Books and papers	3	Minimum N-95 respirator, gloves, and goggles	None required
Carpet and backing	1, 3		
Concrete or cinder block	1, 3		
Hard surface, porous flooring (Linoleum, ceramic tile, vinyl)	1, 2, 3		
Non-porous, hard surfaces (Plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 3		
Wallboard (Drywall and gypsum board)	3		
Wood surfaces	1, 2, 3		
MEDIUM – Total Surface Area Affected Between 10 and 100 (ft²)			
Books and papers	3	Limited or Full Use professional judgment, consider potential for remediator exposure and size of contaminated area	Limited Use professional judgment, consider potential for remediator/occupant exposure and size of contaminated area
Carpet and backing	1, 3, 4		
Concrete or cinder block	1, 3		
Hard surface, porous flooring (Linoleum, ceramic tile, vinyl)	1, 2, 3		
Non-porous, hard surfaces (Plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 3, 4		
Wallboard (Drywall and gypsum board)	3, 4		
Wood surfaces	1, 2, 3		
LARGE – Total Surface Area Affected Greater Than 100 (ft²) or Potential for Increased Occupant or Remediator Exposure During Remediation Estimated to be Significant			
Books and papers	3	Full Use professional judgment, consider potential for remediator exposure and size of contaminated area	Full Use professional judgment, consider potential for remediator/occupant exposure and size of contaminated area
Carpet and backing	1, 3, 4		
Concrete or cinder block	1, 3		
Hard surface, porous flooring (Linoleum, ceramic tile, vinyl)	1, 2, 3, 4		
Non-porous, hard surfaces (Plastics, metals)	1, 2, 3		
Upholstered furniture & drapes	1, 3, 4		
Wallboard (Drywall and gypsum board)	3, 4		
Wood surfaces	1, 2, 3, 4		

Humidity Bloom

A humidity bloom is the growth of xerophilic mold within a living space due to the elevation of indoor relative humidity at or above 60 percent relative humidity for a period of time greater than 72 hours and must be maintained for growth to continue. When the humidity is above 60 percent relative humidity molds will germinate causing what is referred to as a “Mold Bloom”. These molds can bloom in many colors and are often confused with dust, dirt, foxing, or cobwebs.

Mold and mildew are words that refer to more than 100,000 species of fungi. Mold spores are present everywhere in our environment, generally in a dormant state where they do little damage. Spores require moisture to become active. They do not require light.

When water or high relative humidity provides the necessary moisture, dormant spores will germinate, grow fine web-like structures, and eventually produce fruiting bodies that release more spores. Most molds will germinate at 60 percent relative humidity. Increases in temperature can speed the growth rate of active mold.

There are 4 critical requirements for mold growth – available mold spores, available mold food, appropriate temperatures and considerable moisture. The removal of any one of these items will prohibit mold growth.

The only way to reduce the threat of mold in the classroom is to maintain an environment that is not hospitable for the germination of mold spores. The temperature or thermal comfort is not relevant, but the relative humidity must be 60% or less. It is important that the air conditioning system (HVAC) be kept on 24 hours a day, 7 days a week. Inconsistent operation or fluctuations in the temperature can lead to an elevation of humidity that is the cause of many serious mold outbreaks.

Using the RTU alone to maintain the indoor humidity may not be sufficient especially in the cooler winter months when the air handler is not in use. During these times a stand-alone dehumidifier may be necessary to adequately control the indoor humidity.

Humidity & Mold Germination

Mold spores are everywhere all the time, entering from outdoor air as well as on pets and clothing. A mold spore landing on an indoor surface is likely to be insignificant and amount to little more than a common component of indoor dust, *until* such a mold spore lands on a moist surface. *High indoor* humidity causes the surface moisture level to be sufficient for mold sporulation. Since a mold spore requires moisture to germinate and grow, the indoor humidity level is a key gating factor in the control of indoor mold in buildings.

Certain common mold genera and species, such as some members of the *Aspergillus sp.* and others grow readily on clothing, furniture, personal belongings, and building materials if they also have enough moisture. While there are fungal species that are able to grow under a remarkably wide range of environmental conditions, keeping indoor humidity at the appropriate level will reduce the chances of growth of the most common indoor problem molds.

Keep the indoor humidity level in the mid-comfort range. A *maximum* indoor relative humidity of 55% RH may be acceptable, 45% RH better. At 60% indoor RH, we're entering the indoor mold-germination risk zone of high interior moisture on clothing, furniture, personal belongings, and building materials that become favorable to mold growth.

Here in Florida, the hot humid south, the area of greater moisture concentration is generally the exterior of the school or outdoors. However, during the winter, the opposite is true. During the winter the exterior is dryer than the interior of the classroom. In addition, the AC isn't running as much as during the summer which means we're removing less of the indoor water vapor from the air. Supplemental dehumidification in the winter may be necessary.